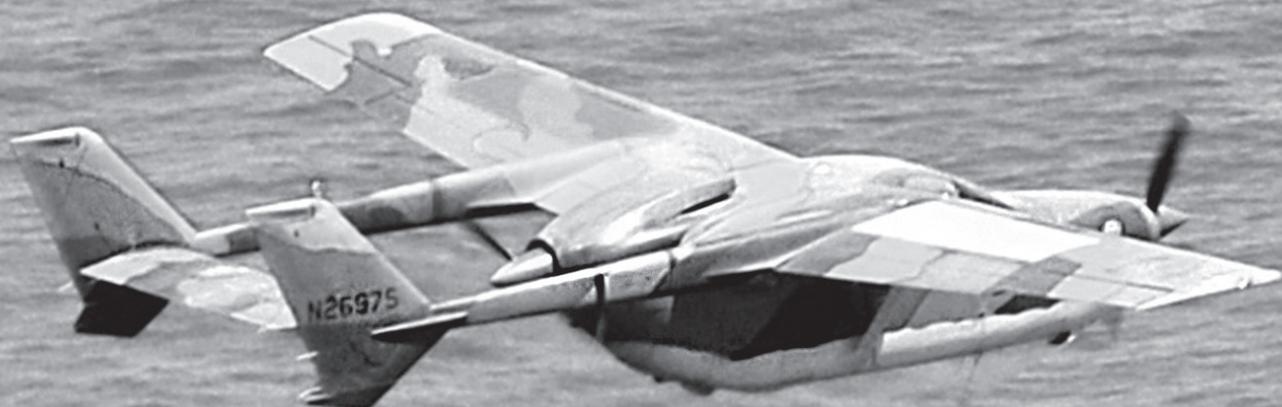


# COASTWATCH

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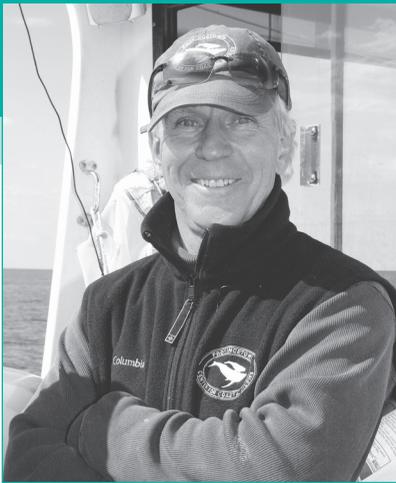
## *IN THIS ISSUE:*

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# LETTER FROM THE PRESIDENT & C.E.O.

## *Seasonal Highs and Lows are Plentiful*

**T**he very atypical “non-winter” winter brought with it some of the most unusual whale and oceanic phenomena that Center for Coastal Studies staff have experienced in our 35 years of studies. Perhaps signaling this dramatic aberration, the right whales returned to their critical feeding habitat in Cape Cod Bay weeks early and immediately displayed social behavior rarely witnessed by our scientists. Then, in January and February, more than 175 Common Dolphins were stranded along lower Cape beaches. And later, our right whale population survey team observed an Arctic Bowhead whale off Cape Cod – an incredibly

rare and confounding occurrence. All of this with our Cape Cod Bay right whale habitat team reporting average water temperatures 3.5 degrees Fahrenheit warmer than usual.

Questions abound here at the Center: Is this a one-time weather anomaly or a portent of future impacts of climate change? Will this phenomenon skew the pattern and rhythm of marine life throughout the Bay for the rest of the year? Dr. Cyndy Tynan, Director of the Right Whale Population Program discusses this situation further in this edition of Coastwatch.

And in the middle of this truly exceptional research and learning opportunity, the National Oceanic and Atmospheric Administration (NOAA) announced another reduction in the federal grant that enables us to conduct the very work that may provide answers to these questions.

Meanwhile, at the Rio +20 Earth Summit in June in Rio de Janeiro, over one hundred heads of state gathered to review progress made since the first Earth Summit twenty years ago. The final comprehensive set of recommendations adopted by world leaders this time was rather disappointing in many ways; however, the high point was that all twenty ocean recommendations that I helped to present were fully approved.

One recurring theme at Rio +20 was the critical need for solid science to be readily available to inform and guide policy and management decisions. This has been a guiding principle for the Center for Coastal Studies since its inception, and Marine Policy Director, Pat Hughes’ article describes just a few of the many ways that Center research and expertise is used to take action on behalf of our coasts and oceans.

So while you catch-up on the details of these activities, please remember that your support and encouragement helps make all of this possible.

Thank you very much!

Richard Delaney  
Executive Director

## COASTWATCH

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Cover Photo: The Right Whale Population program’s aerial survey team is piloted by Joe Chronic aboard his 1969 Cessna Skymaster. Image courtesy of Jenna and Bruce Greenhalgh.



## North Atlantic right whales feeding in Cape Cod Bay.

PCCS image taken under NOAA Fisheries permit 14603.

# AN EARLY ARRIVAL (AND DEPARTURE) FOR RIGHT WHALES

Cynthia Tynan, PhD  
Director, Right Whale Population Program

The year 2012 may be one for the ecological record book on Cape Cod and in New England. In January, some of the highest numbers of critically endangered North Atlantic right whales were observed in Cape Cod Bay since aerial surveys began fourteen years ago. This phenomenon occurred at the same time as anomalously warm ocean conditions were recorded off Massachusetts, with a surface water temperature more than 3.5 degrees Fahrenheit (two degrees Celsius) higher than in previous seasons.

The right whales arrived in Cape Cod Bay in the first week of December – approximately two weeks earlier than usual. As the season progressed, aerial surveys conducted by the Center's Right Whale Population program recorded higher numbers of right whales about a month ahead of typical abundances in the bay. The whales appeared to be engaging primarily in surface active groups (SAGS), considered by researchers to be social and possible courtship behavior. Some feeding whales were observed, although the type and quantity of copepods (the tiny crustaceans that form the bulk of their diet) in the bay, as obtained by the Right Whale Habitat team, was not unusual for that time of year.

The pattern of higher numbers of right whales observed each month was not to last. By April, when the number of animals would have typically been at their highest, feeding on dense patches of *Calanus finmarchicus* (the species of copepod preferred by right whales for its rich fat content), fewer whales than normal were recorded. It appeared that, although some whales were able to find suitably dense patches of prey, many left the bay to search

for food elsewhere, returning a few days later to check on conditions. Within two days, the number of right whales in the bay could change from tens of whales to only a few. By the end of April, the right whales had left Cape Cod Bay to forage in other areas such as the Great South Channel—apparently the prey availability for the animals never reached sufficiently high abundance and density to entice the animals to stay longer. It remains to be seen whether other habitats in the northwestern North Atlantic will provide adequate foraging for the whales this spring and summer.

As the Provincetown Center for Coastal Studies moves forward with research on climate impacts in our coastal systems, we will continue to monitor the effect of the climate on the right whale population and the prey it depends on. The behavior of the right whales this year may well foretell the impact of warmer conditions on the occurrence pattern of right whales in Cape Cod Bay; whales may arrive earlier in higher numbers, but ultimately find less food and leave our coastal waters sooner to search elsewhere.

The impact of the warm ocean conditions of 2012 on the right whales will depend on their ability to find suitable concentrations of food in the coming months without expending excessive energy searching their preferred foraging grounds. Understanding how the whales respond to these unusual conditions will continue to require a broad-based ecosystem approach, evaluating the ecological cascade from plankton to whales.

For more information about the Center's Right Whale Population Studies program, please contact Cynthia Tynan, PhD at [ctynan@coastalstudies.org](mailto:ctynan@coastalstudies.org).

# Events and Activities

## The Chase-Miller Policy Forum

The Center is pleased to introduce the Chase-Miller Forum, a series of lectures and discussions designed to educate the public on the role of science in public policy as it relates to the marine environment. This forum was made possible by the generous support of Linda B. Miller, PhD, a long-time patron and member of the Board of Directors.

August 13:

### Sea Level Rise Effects on Cape Cod and the Islands: What to expect with climate change?

Jeff Williams, Scientist Emeritus with the United States Geological Survey (USGS) and an affiliate graduate faculty member in the Geology and Geophysics Department at the University of Hawai'i, Manoa. 5pm at the PCCS Heibert Laboratory, 5pm at the Hiebert Marine Lab, 5 Holway Avenue, Provincetown.

August 21:

### Drawing Lines in the Sand: Mapping and Managing Community Aquaculture Development.

Owen Nichols, Director, PCCS Marine Fisheries Research program, and Henry Lind, retired Shellfish Biologist and Director of the Town of Eastham Department of Natural Resources. 7pm at the Chatham Community Center, 702 Main Street, Chatham.

## Meet Delilah

Step inside Delilah, an inflatable, life-sized North Atlantic Right Whale, and learn all about these rare and amazing animals. Free. No Registration required.

11am at the Hiebert Marine Lab, 5 Holway Avenue, Provincetown.  
August 6, 13, 20, 27

# MARINE POLICY WORK AT THE CENTER FOR COASTAL STUDIES

Pat Hughes

Director, Marine Policy Program

One of the key responsibilities of the Center is to provide unbiased research and applied science to individuals and organizations that initiate, develop, enact and implement policies and laws to manage and protect marine resources. Here are a few examples of how the Center's work is utilized by international, federal and state resource managers, town governments and citizens in carrying out their responsibilities to protect the marine environment.

## Marine Animal Entanglement

Entanglement is a major threat to large whales and turtles, and PCCS contributes to this issue on several levels. Because of the endangered status of many of these species, the successful release of even one individual may have a profound effect of the survival and recovery of the population as a whole.

The Center's Marine Animal Entanglement Response (MAER) Program is key component of the federal mitigation process for large whale and turtle entanglements. Disentanglement efforts also yield fundamental data needed to understand and prevent future events. The data that we collect as part of our research also contribute to management efforts to understand and minimize the spatial and temporal overlap between large whales and fishing gear.



*The flukes of the entangled humpback Serengeti are visible as the MAER team assesses the situation. Serengeti was disentangled on July 6, 2012.*

*PCCS image taken under NOAA Permit 932-1905.*

The Center's Humpback Whale Studies program provides further insights into the entanglement issue from the population perspective. Our sightings of individual humpback whales prior to and after entanglement provide critical data on the likely duration of the event and its biological effects. This information is utilized by the National Oceanic and Atmospheric Administration (NOAA) to determine which humpback whale entanglement events have the potential to trigger further management action.

The PCCS Humpback Whale Studies Program also studies injuries on free-ranging humpback whales to further clarify risk factors and trends over time. It is one of several tools that federal managers will use to determine



*Tail flukes of humpback whale Sockeye. The Center's extensive research and data on humpback whales and other species formed the basis for the nomination of Stellwagen Bank as a National Marine Sanctuary.*

*Image courtesy of the PCCS Humpback Whale Studies program.*

the effectiveness of the federal Atlantic Large Whale Take Reduction Plan (ALTRWP). The ALTRWP is prepared and monitored by a Take Reduction Team comprised of federal and state resource managers and representatives of the fishing industry, the conservation community and scientists. Dr. Jooke Robbins, Director of Humpback Whale Studies and Dr. Stormy Mayo, Director of Right Whale Habitat Studies, are scientific members of the Team.

### **Humpback Whale Research**

The Center's humpback whale research in the North Atlantic and in the South Pacific contributes data and expertise to federal and international assessments of humpback whale population size, trend and status.

The Center played a key role in the international Year of the North Atlantic Humpbacks (YoNAH) Project, which produced the first reliable estimates of abundance and trend for the North Atlantic population. The YoNAH estimate serves as a baseline for assessing the population's increases or decreases over time. Center scientists also contributed to the first NOAA Humpback Whale Recovery Plan and the first federal stock assessment of humpback whales at American Samoa. Internationally, our scientists participated in the Comprehensive Assessment of North Atlantic humpback whales by the Scientific Committee of the International Whaling Commission.



PCCS research and data on humpback whales and other species formed the basis for the nomination of Stellwagen Bank as a National Marine Sanctuary, and our humpback whale research in the Gulf of Maine

*Continued on pg. 6*

*Christy Hudack of the Right Whale Habitat Studies program analyzes zooplankton-rich water samples from Cape Cod Bay. The Center's early research on North Atlantic right whales in Cape Cod Bay provided some of the first data identifying the bay as essential habitat for these endangered animals.*

*Image courtesy of Elise Trelegan.*

# Events and Activities

## **Seal Walks**

A number of different seal species occupy New England waters including Harbor and Gray seals. Join Center naturalists for a walk to seal haul out sites on the outer beaches of Cape Cod. Free. Reservations required.

Call Province Lands Visitor Center at 508-487-1256 to register.

*August 1 at 4:30pm, August 8 at 10:30am, August 15 at 4pm, August 22 at 9:30am, August 29 at 3:30pm.*

## **Tidal Flats Exploration**

Every twelve hours, the tides of the Outer Cape retreat to reveal an exciting world of hidden creatures. Come get your feet wet and discover their secrets with a PCCS naturalist! Free. All ages welcome. No registration required.

Meet at the West End Breakwater, near Provincetown Inn.

*August 7 at 9:30am, August 14 at 3pm, August 21 at 9:30am, August 24 at 11:30am, August 28 at 2:30pm.*

## **Arts and Crafts for Kids**

Make sun prints, mobiles or white line wood block prints of the unique marine creatures that live in our waters. Free. No registration required. Hiebert Marine Lab, 5 Holway Avenue.

*Aug 15th at 10am*

# Events and Activities

## Kayak Tours

Explore Provincetown Harbor by kayak with PCCS educator Jesse Mechling and learn about the natural history of this quaint fishing village. Reservations required, fee applies.

Register at Venture Athletic Kayak at 508-487-9442.

August 8, 14 and 28 at 5:30 pm, August 21 and 24 at 5pm.

## Bike Tours

Tour the Province Lands by bicycle with PCCS naturalists and learn about this unique landscape.

Reservations required, fee applies. Register at Gale Force Bikes at 508-487-4849.

4pm on August 2, 9, 16, 23 and 30.

## Full Moon Dune Hike

Ever wanted to see the moon rise over Cape Cod's highest dunes? Join PCCS naturalists for a moonlit exploration of the Provincelands. Must be able to walk 3 miles in soft sand. Free. Reservations required. Call PCCS at 508-487-3623 x103 to register. Meet at Snail Road, just off Route 6.

August 2 at 7:30pm, August 31 at 7pm.

and the Caribbean helped to provide the foundation for the establishment of Sister Sanctuaries in the United States and the Dominican Republic.

## Right Whale Research

The Center's early research on North Atlantic right whales in Cape Cod Bay provided some of the first data identifying the bay as essential habitat for these endangered animals. This information was crucial to the state and federal designation of Cape Cod Bay and the Great South Channel as an area of critical habitat for right whales. Working together, the Center's right whale habitat and right whale population programs continue to provide vital data on when, where, why and how right whales utilize this area; after each field survey Center scientists provide up-to-the-minute information to state and federal agencies, who then alert vessels transiting the area, thus reducing the risk of ship strikes.

## Ocean Management

Ship strikes are one cause of large whale injuries and mortality. Multi-decade cetacean sighting databases held by PCCS and by our colleagues at the Whale Center of New England were the foundation for moving the busy shipping lanes that cross Stellwagen Bank on approach to Boston Harbor. The Gerry E. Studds Stellwagen Bank National Marine Sanctuary (SBNMS) staff led this effort and the lanes were officially re-located in 2009, potentially leading to an 81% reduction in the risk of ship strikes to large whales in the region.

In 2009, the Commonwealth of Massachusetts adopted the country's first comprehensive ocean management plan. PCCS scientists were members of policy and scientific committees that contributed to the Massachusetts Ocean Management Plan, advising on the identification of significant marine resources as well as management measures and performance standards to protect these resources. The Center's research was also integrated into the development of the Cape Cod Ocean Management Plan (CCOMP), prepared by the county's land-use planning and regulatory agency, the Cape Cod Commission. The CCOMP identifies exclusionary areas for certain activities, includes time of year restrictions to protect right, humpback and fin whales and specifies protective measures for sea turtles and fisheries habitat.

## Coastal Geology and Changing Shorelines

The Center's Marine Geology Program, in collaboration with the Cape Cod National Seashore, recently completed a comparative study of the ocean-facing shoreline position of the Outer Cape from Chatham to Provincetown. Scientists re-examined more than 200 locations surveyed in the late 1800s, compared data from the two time periods and determined that overall, erosion is occurring faster in the southern region and slowing around Truro, while the hook of Provincetown is gaining sediment. This work, as well as that done by the Center's Dr. Graham Giese on the Nauset Beach-Monomoy Island barrier beach complex, is important to understanding the impacts of sea-level rise on the Outer Cape, and will be used by the towns, the Seashore and the Monomoy Wildlife Refuge to develop strategies to adapt to the changing coastline.



*Jesse Mechling, Director of Education, shares the secret wonders of Provincetown's tidal flats with a group of enthusiastic young naturalists.*

*PCCS image.*

The Center's Sea Floor Mapping Program is developing and applying methods to map shallow water areas, using a state-of-the-art sonar system, to characterize nearshore resources and seafloor features, such as sand waves and eelgrass beds. . These maps and resource characterizations will be used by local, state and federal resource managers in assessing the presence and condition of vital resources such as eelgrass, and will provide a valuable baseline from which to measure the impacts of climate change, pollution and other anthropogenic factors on a particular area or habitat.

### Coastal Environmental Quality Monitoring

The Center's Cape Cod Bay Monitoring Program (CCBMP) collects data on water quality and related indicators of ecosystem health throughout the Bay. These data enable scientists and decision makers to track changes, analyze trends, and evaluate the overall condition of the bay. Complemented by other studies, the CCBMP gives local and state decision-makers the ability to identify and address problems before conditions worsen. The CCBMP will contribute to efforts to evaluate the success of wastewater and stormwater management programs implemented by towns around the bay.

For more information about the Center's Marine Policy program, please contact Pat Hughes at 508-487-3623 x 121 or email [phughes@coastalstudies.org](mailto:phughes@coastalstudies.org).

# Events and Activities

### Summer Lecture Series

Join Jesse Mechling each week for a different discussion on the Cape's marine environment. Topics include: Whales of Cape Cod; Marine Animal Disentanglement; History of Whaling; and more. Free. No registration required. Meet at the Province Lands Visitor Center.

*Thursdays at 11am through August 30.*

## A BUSY SUMMER FOR THE ENTANGLEMENT RESPONSE TEAM

On July 5 and 6, 2012 the Marine Animal Entanglement Response (MAER) Team at the Provincetown Center for Coastal Studies disentangled two humpback whales off Chatham. The first, a young whale identified by the Center's Humpback Whale Research program as the 2004 calf of Dusky, was heavily entangled and anchored in place, with line through its mouth and wrapped several times around its body and tail. The second, indentified as Serengeti, had line attached to heavy gear on the seabed caught in its mouth and wrapped around its head, making normal breathing difficult for the animal.

In both cases the MAER team was able to use hook-shaped knives on the end of long poles to sever the line and the animals, though bruised and abraded, swam off gear free. Both whales are expected to make a good recovery.

Summer is typically a busy time for the MAER team; reports of entangled animals are higher than usual due in large part to the increased number of recreational boaters on the water and generally calmer sea conditions that make it easier to spot entanglements.

**If you spot an entangled whale, sea-turtle or other marine animal, please report it as soon as possible to the Marine Animal Entanglement Response Hotline (1-800-900-3622) or the US Coast Guard, then stand by the animal at a safe distance until trained responders arrive.**

The Center would like to take this opportunity to thank those organizations, foundations and individuals who support this vital work. They include the National Marine Fisheries Service (NMFS); Massachusetts Division of Marine Fisheries (MA-DMF); the Massachusetts Environmental Trust; the Pegasus Foundation; the Hermann Foundation, the Mary P. Dolciani Halloran Foundation, the Grace W. Allsop Foundation, the Veronika Crawford Foundation, the G. Unger Vetlesen Foundation, and contributions from PCCS members. Thank you all for your generosity.





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*PCCS has made every effort to ensure the accuracy of this list. If you discover an error, please contact us at 508-487-3622, ext. 104, and we will rectify it at the earliest opportunity.*

*PCCS image taken under NOAA Fisheries permit 14603.*